

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604

DATE: APR 26 2013

SUBJECT: INSPECTION REPORT – Atlas Resin Proppants, LLC, Taylor, Wisconsin

FROM: Michelle Heger, Environmental Scientist
AECAS (IL/IN)

THRU: Nathan Frank, Chief
AECAS (IL/IN)



TO: File

Date of Inspection: August 14, 2012

Attendees: Michelle Heger, Environmental Scientist, U.S. EPA
Katharina Bellairs, Environmental Engineer, U.S. EPA
Martin Sellers, Air Quality Engineer, West Central Region, Wisconsin DNR
Erica Grant, Production Manager, Atlas Resin Proppants
Cathleen Hegge, Quality & Technical Services Manager, Atlas Resin Proppants
Joe Knutson, Plant Coach, Atlas Resin Proppants

Purpose of Inspection:

The purpose of conducting an inspection of the Atlas Resin Proppants, Taylor, WI facility was to assess compliance with air pollution control regulations under the Clean Air Act, with federally approved portions of the Wisconsin State Implementation Plan, and with their current Title V Permit (Permit No. 627005280-P10).

Company Description and Background:

Location: N7530 County Road P, Taylor, WI 54659
Primary Contacts: Erica Grant, Production Manager, Atlas Resin Proppants
Dawn Tiffany, Safety, Health & Environmental Specialist, Atlas Resin Proppants

The Atlas Resin Proppants facility in Taylor, Wisconsin (“Atlas Taylor” or “facility”) is a resin-coated sand production facility. The plant consists of raw and finished sand storage silos, a batch mixer, a continuous mixer, sand handling operations, a scrubber, and baghouses. Production began at the Taylor facility in December 2005. Standard operating time is 24/7. Atlas has 135 employees across three separate facilities and 45 employees at the Taylor facility.

Applicable Regulations:

The Atlas Taylor facility sand silos and sand handling operations are subject to Wisconsin Administrative Code emission limits for particulate matter (PM) of 0.1 lb/hr and 1.0 lb/hr, respectively. Atlas must operate the baghouse control device at all times and monitor the pressure drop across the baghouse. In addition, the batch mixer, continuous tank, and sludge tank with wet scrubber control are subject to PM, volatile organic compound (VOC), and phenol emission limits. PM emissions must not exceed 1.5 lb/hr (limit based on modeling to protect the National Ambient Air Quality Standards). Atlas must operate and monitor the wet scrubber at all times, and achieve an overall control efficiency of 64% for VOC emissions or a VOC emission rate no more than 10.6 pounds/hr. Atlas is also subject to a phenol emission limit of 1583 lb/month, a free phenol content of the resin of 1.5% by weight, and an overall control efficiency of 54.5% for phenol emissions or a maximum emission rate of 2.8 lb/hr. This permit emission limitation was established to keep potential emissions of phenol to 9.5 tons per year.

Atlas follows a Compliance Assurance Monitoring (CAM) plan, per 40 CFR, Part 64. Atlas's permit states that the facility is subject to the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters at Major Sources at 40 CFR Part 63, Subpart DDDDD (Subpart DDDDD). Atlas must comply with the requirements of Subpart DDDDD at such time as judicial review is no longer pending or US EPA completes its reconsideration of the rules, whichever is earlier, per 40 CFR § 63.7495(b).

Inspection:

U.S. EPA representatives ("we") arrived at the Atlas main office at 8:45am. The main office told us to meet the plant manager at the facility and that the main Environmental Manager, Dawn Tiffany, was out of the office. We observed strong phenol and ammonia odors outside of the facility.

Opening Meeting and Discussion

We arrived at the Atlas Taylor facility at approximately 9 am CST on August 14th. We met with Ms. Hegge, Ms. Grant, and Mr. Knutson in a conference room. Ms. Grant gave a process and facility overview as follows:

Process Description

Atlas uses two different types of phenolic resins. The "Novalac" resin begins in a pastille form and the "Resol" resin begins as a powder. Atlas customers are both the natural gas and the oil industries. Their two main types of product are: 1. PRC (uses more hexa cross-linking agent, is pre-cured, no active sites left on the resin coating, only uses novalac resin) and 2. CRC (less hexa used, more water, still has active sites left on the final resin coating, uses both resin types). Ms. Grant stated that the oil customers request the CRC product and the natural gas customers request mainly their PRC product. Ms. Grant stated that Atlas has been producing less PRC product recently because as natural gas prices have been decreasing, so has demand for Atlas'

resin coated sand products.

Atlas receives their sand washed, dried, and sized in 16/30 mesh (largest) and 40/70 mesh (smallest) sizes from the Badger Mining facility nearby. The sand arrives at the facility by rail and is stored in outdoor pits. Atlas operates the same process in two independent areas: Tower A and Tower B, of the facility. Either tower can make any product; however, Ms. Grant stated that they tend to make PRC product on Tower B because the permit allows for more resin use for Tower B.

First, sand is conveyed via a bucket elevator to the storage silos. Tower A has three silos with a total of 500 tons capacity and Tower B has two silos with a total of 500 tons capacity. From the storage silos, a screw conveyor moves the sand into the plant. The sand begins in a 15 ton holding tank, then moves to a hopper which weighs each batch to 2500-3000 lb of sand. Next, each batch goes through a natural gas-run batch heater. After heating, the hot sand is added to a batch mixer along with hexa solution and resin or resins. The hexa solution is used as a cross-linking agent in the resin coating reaction. Atlas mixes their own 30% hexa solution on-site. The hexa mixer is not connected to the facility's air pollution controls. Ms. Grant stated that a 3000 lb batch of premium product (PRC) uses approximately 50 pounds of hexa solution. Atlas also adds silicone and chembetaine in about 1-2 lb per batch in order to reduce static and increase wettability of the product. The batch mixer is on a five minute cycle. After this time, the sand and resins move from the batch mixer into the continuous mixer. The PRC product often is still reacting at the point of the continuous mixer and the CRC product also needs the additional movement of the continuous mixer to further its reaction. Following the continuous mixer, the coated sand moves through a series of screens. The final product (at around 160°C) is cooled in a glycol cooler to bring the temperature down to 30°C. Finished product is stored in a product storage silos before shipment by rail. Atlas runs a maximum of 12 batches per hour. Atlas sends waste and oversized coated sand to the Veolia landfill in Eau Claire, WI.

Both mixers exhaust to a Venturi type scrubber with a packed column and demister. The scrubber liquid is water with a caustic addition. Phenol settles out in the scrubber sludge tank. The liquid is recycled from the sludge tank while the phenol sludge (tar-like appearance) is sent to a Waste Management facility in Berlin, WI. Scrubber flow is monitored by a daily visual check. Ms. Grant stated that they change the scrubber solution about once per month. With the scrubber, Atlas claims phenol removal efficiency of about 60%. Ammonia is not treated with the scrubber. Recently, Atlas has had plugging problems; Ms. Grant stated that the month before the inspection, the scrubber had been plugging repeatedly. She noted that an indication of an issue with plugging of the meters and fouling with the phenol resin if their mixers begin to "puff." In addition, they know if there is a problem with plugging of the scrubber packing if the pressure deviates from about 12". Because of these plugging issues with the scrubber, Atlas has plans to replace both scrubbers in both Towers with thermal oxidizers (RTOs) with about 6000 scfm throughput. The batch mixers would exhaust to a preheater followed by the thermal oxidizer. Ms. Grant stated that Atlas is currently drafting the permit application and hope to be able to install the RTOs this coming fall.

The resin tanks, sand handling operations, and the screener following the continuous mixer all exhaust to a baghouse. The pressure drop of the baghouse is monitored every six hours. The

facility is currently on an eight month cycle for baghouse bag replacement. Ms. Grant stated that Atlas used to be on a yearly cycle for replacement, but now that they have been producing more CRC product, they have noticed that bag change-out needs to occur more often. The last bag replacement was in June 2012.

The facility's last stack test was on January 12, 2011 for particulate matter (PM). Ms. Grant stated that they calculate ammonia emissions based on monthly hexa usage and were over their ammonia limit last month. The facility has never conducted stack testing for ammonia. The facility conducted stack testing on March 17, 2009 for PM on the baghouses and scrubber and VOCs and phenol on the scrubber stack. They do not calculate formaldehyde emissions, but do report it in the TRI database.

Facility Tour

The tour began at 10:20 am. For simplicity, all photos are saved as an attachment to the inspection report because Atlas claimed all photos as confidential business information (CBI). First, we viewed the chemical raw material storage in Towers A and B. Next, we observed the hexa solution mixing tank which has an open top. Then, we observed the raw sand silos for both Towers A and B. From there, we followed the sand as it moved through the facility process. In the railcar unloading area, each Tower has about 500 tons of raw sand capacity, or about five full railcars. Atlas receives 7-8 railcars per day.

We went to the top floor of Tower A where the day tank collects raw sand before it goes into the mixer. At this level, we observed a very strong ammonia odor. Ms. Grant stated that at the time of inspection, Tower A was producing the PRC product and the odor is generally stronger with the PRC product than with the CRC product. The hexa solution is metered into the mix tank using a flow meter. Next, we observed the batch mixer where the resin, hexa, and sand are mixed.

We walked down a level and noted a large fan blowing into the plant along with the same strong odor, which persisted throughout the facility. We observed a batch drop from the heater into the batch mixer. Then, we walked down another level to observe the continuous mixer and scrubber controls. At the time of inspection, the scrubber pressure drop read 10" and the demister gauge was at 0.48. Ms. Grant stated that in general if she sees a higher value than this, it may be an indication that the demister has plugging. We observed an employee shoveling black tar-like scrubber sludge off the floor into a barrel. The Tower A baghouse read 3" H₂O at the time of inspection.

Next, we took a brief tour of Tower B which was not operating at the time of inspection. Ms. Grant stated that they were replacing the scrubber water and changing the scrubber tower packing. Because Tower B was not operating, we were able to view inside the mixer and see the duct leading into the scrubber that typically clogs.

We observed a foamy, soapy looking liquid running through the parking lot into the field immediately adjacent to the facility. Ms. Grant stated that a contractor was cleaning out the cooler with a coil cleaner called "NuBrite" containing sodium hydroxide and that may have been

the liquid we observed. EPA requested a copy of the MSDS for the coil cleaner. *See* Attachment 1 for photos of the incident.

All photos taken during the inspection are saved in the electronic case file.

Closing meeting

EPA requested the following documents:

1. Ammonia emission calculations (will receive via email)
2. Formaldehyde emission calculations
3. Resin usage (email)
4. RTO size plans, flow and gas use (email)
5. Phenol emissions
6. Hexa usage (email)
7. Flow diagram¹
8. MSDS for resins
9. January 2011 test results

EPA informed Atlas representatives that the photos taken during the tour would be sent to Ms. Grant and Ms. Tiffany via mail. Atlas claimed some process information as confidential business information, as noted above. EPA representatives left the Atlas Taylor facility at 11:45 am.

ATTACHMENT:

1. Photos

¹ Flow diagram claimed as CBI